November 1, 1995

Colonel Robert H. Reardon, Jr.
U.S. Army Corps of Engineers
Norfolk District
803 Front Street
Norfolk, Virginia 23510-1096

Attn: Robert Berg
Regulatory Branch

Re: Savage and Lawrence/Ackerly Tract, Permit Application 95-5724-29, Chesapeake, Virginia

Dear Colonel Reardon:

The U.S. Fish and Wildlife Service has reviewed the Department of the Army permit application, 95-5724-29, submitted for the Savage and Lawrence/Ackerly tract, to construct logging roads and decks in Chesapeake, Virginia. Your October 23, 1995 request for formal consultation was received on October 23, 1995. This document represents the Service's biological opinion on the effects of that action on the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) in accordance with Section 7 of the Endangered Species Act of 1973, as amended, (16 U.S.C. 1531 et seq.). The Dismal Swamp southeastern shrew has not been documented within the project site, but the applicant has chosen to assume this species is present in areas with appropriate habitat. A complete administrative record of this consultation is on file in this office.

I. CONSULTATION HISTORY

Consultation history is provided in Appendix A.

II. BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The 1,664-acre property is located west of Martin Johnson Road and south of the Norfolk and Western Railroad line in Chesapeake, Virginia (Figure 1). The project purpose is to construct logging roads and logging decks (area where logs are stockpiled before transportation off-site) to allow 465 acres of forested non-tidal wetlands to be logged (Figure 2). Construction of logging roads and decks will entail mechanized clearing (through use of a bulldozer) of forested wetlands. Wetland impacts will be minimized through use of wooden mats instead of fill for roads and use of an existing power line easement for one of the logging

roads. The property owners plan to construct three logging roads and six logging decks (each 0.25 acres) to aid in logging. One logging road is proposed at the southern portion of the property and will utilize an existing 1,320-foot gravel road running west from Martin Johnson Road to the eastern property line. Then, west of the property line, a 1,000-foot long, 20-foot wide logging road will be constructed of wooden mats. Construction of this road will entail bulldozing the path and laying wooden mats within the cleared area. One logging deck is proposed at the western end of this road. The second logging road, 6,600 feet long and 20 feet wide, will be located on the northern portion of the property. This road will run west from Matthews Used Auto Parts, which borders the property on the east side. An existing gravel road on the Matthews property will be improved and utilized for site access, but the improvements will not impact wetlands. The 6,600 foot logging road will consist of wooden mats laid on the soil surface, but mechanized land clearing is not needed as it is within a maintained power line easement. Three logging decks are to be constructed north of this road and one is to be constructed to the south of the road. The third logging road will be 1,000 feet long, heading south from the 6,600-foot-long logging road. This road would also be 20 feet wide and have one logging deck. No permanent impacts are expected from this project since no fill is being used to construct the logging roads or logging decks nor is any ditching or excavation work proposed.

The action area for this biological opinion has been determined by the Service to be the 465-acre area to be logged.

RANGEWIDE STATUS OF THE SPECIES

The Dismal Swamp southeastern shrew is a small mammal that weighs less than 0.2 ounces and measures approximately four inches in length. Little is known about the life history of the shrew, except that in 1905, a litter of five young were found in a nest in the Dismal Swamp (U.S. Fish and Wildlife Service 1994). However, the species' life history is likely similar to that of the southeastern shrew (*S. l. longirostris*). Based on a few studies, it appears that southeastern shrews average approximately four young per litter (U.S. Fish and Wildlife Service 1994). Pregnant southeastern shrews have been found in Indiana from 8 April to 25 September and in Alabama and Georgia from 31 March to 6 October (U.S. Fish and Wildlife Service 1994). Shrews of the genus *Sorex* usually have at least two litters per year (Churchfield 1990). It is likely that young shrews remain in the nest for their entire period of growth and development and are nearly adult size when they leave the nest (U.S. Fish and Wildlife Service 1994).

Southeastern shrews feed mainly on small-sized invertebrates, but consume some vegetation (U.S. Fish and Wildlife Service 1994). Typically, shrews forage intermittently throughout the day and night in all seasons and seem to have highest levels of activity associated with rainfall and periods of high humidity. Much of their foraging occurs in the leaf litter or in tunnels in the upper layers of the soil (U.S. Fish and Wildlife Service 1994). Predators of southeastern shrews include barred and barn owls, domestic cats, and occasionally snakes, domestic dogs, and opossums (French 1980).

The main reasons for the shrew's decline are habitat loss and modification and possible loss of genetic integrity through interbreeding with the more common upland subspecies (U.S. Fish and Wildlife Service 1994). "It is presumed that the Dismal Swamp southeastern shrew developed its distinctive size and

coloration while geographically or ecologically isolated within the Great Dismal Swamp during the Holocene (Handley 1979). The recent human-induced progression toward homogenous mature hardwood forest, more representative of habitat conditions of the surrounding region, leads to the possibility that the more common and presumably more generally adapted . . . subspecies could invade the Dismal Swamp and genetically overwhelm the existing populations of *S. l. fisheri*, which are more specifically adapted to historic swamp conditions" (U.S. Fish and Wildlife Service 1994).

The Dismal Swamp southeastern shrew's distribution is considered coincidental with the boundaries of the historic Dismal Swamp, an extensive contiguous wetland complex that once occupied most of the low-lying land between Norfolk, Virginia and the Albemarle Sound in North Carolina. Historically, this wetland complex was maintained in a variety of successional stages (such as marshes, canebrakes, pocosins, and forest) by natural fires. The original Dismal Swamp ecosystem has been greatly reduced in size because of urban development and the clearing and draining of land for agriculture and silviculture. Most of the remaining wetlands are forested. Approximately 197,680 acres of these wetlands remain, more than half of which are preserved by the Service as the Great Dismal Swamp National Wildlife Refuge, created in 1974, which is in Virginia and North Carolina. The Service is attempting to restore some of the vegetational and successional diversity to the portion of the Dismal Swamp ecosystem within the Refuge. The Great Dismal Swamp State Park in North Carolina provides an additional 22 square miles of shrew habitat. There are additional areas of protected shrew habitat such as the North Landing River Preserve and the Northwest River Park in Virginia and Elizabeth City State University's Dismal Swamp Wetland in North Carolina.

Outside the protected areas, remnants of the Dismal Swamp are rapidly disappearing in southeastern Virginia due to development associated with the Hampton Roads metropolitan area (U.S. Fish and Wildlife Service 1994). In North Carolina, agricultural and silvicultural conversion are the main causes of habitat loss. "In the vicinity of Elizabeth City, North Carolina, for example, two tracts totaling some 32,000 acres of swamp have been cleared and drained within the past 20 years. Besides these contiguous tracts, many smaller areas within the historic Dismal Swamp of North Carolina have been ditched and cleared in a piecemeal fashion. In Virginia, a comparison of U.S.G.S. 7.5-minute topographic maps to recent aerial photography revealed a collective loss of some 2,600 acres of forested land, scattered over four maps portraying the Dismal Swamp (S. Martin, U.S. Army Corps of Engineers, pers. comm. 1993)" (U.S. Fish and Wildlife Service 1994).

Within the historic Dismal Swamp boundaries, the Dismal Swamp southeastern shrew is found in a range of habitats including recent clearcuts, regenerating forests, young pine plantations, grassy and brushy roadsides, young forests with shrubs and saplings, and mature pine and deciduous forests (U.S. Fish and Wildlife Service 1994). The shrew is likely to exist at highest densities in early successional wetland habitats, such as cane stands; shrub-dominated areas; and young, open forests that retain a fairly dense herbaceous understory. The shrew also occurs at high densities within cleared right-of-ways, such as those used for utility lines, as these areas often contain early successional habitats such as scrub-shrub wetlands. Mature wetland forests also provide habitat diversity important to the integrity and dynamic structure of the shrew population as a whole. Rose (1983) found that the shrew was most abundant in mid-successional, 12- to 15-year-old regenerating forests having a dense understory, moist organic soils, and moderate leaf

litter.

Recently, new evidence suggests that the Dismal Swamp southeastern shrew may occur throughout the coastal plain of North Carolina, at least as far south as Wilmington (U.S. Fish and Wildlife Service 1994). However, until this can be substantiated through additional distribution and taxonomy studies, the shrew will remain on the Service's list of endangered and threatened wildlife and plants. As such, the shrew, and its habitat, will continue to receive protection pursuant to the ESA until it is removed from that list.

ENVIRONMENTAL BASELINE

Status of the Species - The tract consists entirely of non-tidal forested wetlands. The palustrine forested wetlands comprising much of the site and palustrine scrub/shrub wetlands in the power line easement are typical of Dismal Swamp habitat. The Norfolk County soil survey maps this site with mainly Mucky peat soils, although some Bayboro mucky loam soils and Portsmouth loam soils are mapped on the northern portion of the property. The Dismal Swamp southeastern shrew has been documented within 2,000 feet of the action area.

Effects of the Action - Direct impacts to the shrew associated with this project include the potential to crush shrews with vehicles and heavy equipment while clearing vegetation for and constructing the logging roads and decks and during the logging operation, resulting in death or injury. Additionally, the shrew will be directly affected by the temporary loss of 465 acres from the logging and use of the logging roads and decks. Logged areas will result in early successional vegetation that provides good habitat for shrews.

While there is likely to be a loss of individual shrews, because the logged area will be allowed to regenerate and no permanent habitat loss or fragmentation is anticipated, this loss should not affect the genetic viability or range of the species. "Because these shrews have a high reproductive potential and rapid maturation rate, limited collection of individuals is not detrimental to healthy populations, although more widespread mortality associated with loss or permanent alteration of habitat continues to constitute the primary threat to the survival of this subspecies." (U.S. Fish and Wildlife Service 1994). Shrews from areas adjacent to the action area, including the remainder of this tract, will likely recolonize the portion of this site where the temporary impacts (i.e., logging) will occur.

Cumulative Effects - Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consulta-tion pursuant to Section 7 of the ESA. We are not aware of any future State, local, or private actions planned for this tract.

CONCLUSION

After reviewing the current status of the Dismal Swamp southeastern shrew throughout its range and in the action area, the environmental baseline for the action area, the effects of the proposed logging, and the cumulative effects, it is the Service's biological opinion that the construction of the logging roads and decks,

as proposed, is not likely to jeopardize the continued existence of the Dismal Swamp southeastern shrew. No critical habitat has been designated for this species, therefore, none will be affected.

III. INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the ESA, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

AMOUNT OR EXTENT OF TAKE

Previous studies have indicated that "mature forests with closed canopies...have densities of only 1-4 [shrews] per hectare" which is "only about one-fourth or less the densities of southeastern shrews compared to early successional stage habitats dominated by grasses and shrubs" (Rose 1995). Therefore, the Service anticipates that 465 Dismal Swamp southeastern shrews (approximately 2.5 shrews/hectare) will be taken during construction of the logging roads and decks and the logging operation. The incidental take is expected to be in the form of direct killing, harassment, and harm.

REASONABLE AND PRUDENT MEASURES

The measures described below are nondiscretionary, and must be implemented by the U.S. Army Corps of Engineers so that they become binding conditions of any permit issued to the applicant in order for the exemption in Section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section 7(o)(2) may lapse. The Service considers the following reasonable and prudent measure(S) to be necessary and appropriate to minimize take of the Dismal Swamp southeastern shrew.

1. Vegetation clearing and use of heavy equipment for road and deck construction should be minimized. This will reduce soil and leaf litter disturbance, thereby minimizing impacts to shrews and their habitat.

2. Impacts to wetlands should be minimized. This will lessen the impacts to shrew habitat.

3. Avoid use of pesticides and herbicides. This will minimize impacts to the shrew.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of Section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. During construction and vegetation clearing activities associated with the roads and decks, vehicles and heavy equipment used for clearing and construction will remain within the 20-foot road width or the footprint of the deck.

2. Clearing of vegetation in wetlands will be done by hand where practicable.

3. All work in wetlands will be done on mats where practicable.

4. No use of broad scale aerial herbicide or pesticide applications.

5. The applicant is required to notify the Service before initiation of construction and upon completion of the project at the address given below. All additional information to be sent to the Service should be sent to the following address:

Virginia Field Office
U.S. Fish and Wildlife Service
P.O. Box 480
U.S. Route 17, Mid-County Centre
White Marsh, VA 23183
(804) 693-6694

6. Care must be taken in handling any dead specimens of the Dismal Swamp southeastern shrew that are found in the project area to preserve biological material in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. The reporting of dead specimens is required to enable the Service to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. Upon locating a dead specimen, initial notification must be made to the following Service Law Enforcement office:

Division of Law Enforcement
U.S. Fish and Wildlife Service
P.O. Box 187
Yorktown, VA 23690
(804) 890-0003

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that impacts to shrew habitat have been minimized.

IV. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to further minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans and other recovery activities, or to develop information to benefit the species.

The Service recommends that the Corps conduct before and after surveys for the Dismal Swamp southeastern shrew within the action area. This will allow our agencies to determine the exact effects of logging roads and decks on the shrew. If one or two surveys were conducted before clearing and construction are initiated and several annual surveys are conducted after project completion, valuable information could be obtained regarding use of the road by shrews and the extent to which shrews are impacted. This information could be used in future consultations to better determine the extent of project impacts and evaluate the effectiveness of the terms and conditions provided in biological opinions. Additionally, the Technical/Agency Draft of the Recovery Plan (U.S. Fish and Wildlife Service 1994) for this species indicates that "more information is needed on the distribution and abundance" of the shrew outside the Refuge. Any information on shrew distribution or abundance obtained from the action area would enhance the recovery of this species. The Service would be pleased to work with the Corps to design such a study.

In order for the Service to be kept informed of actions that minimize or avoid adverse effects or benefit listed species or their habitats, the Service requests notification of the implementation of any of these conservation recommendations by the Corps.

V. REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action outlined in the Corps' request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Unless information in this biological opinion is protected by national security or contains confidential business information, the Service recommends that you forward a copy to the following agency:

Virginia Department of Game and Inland Fisheries
Wildlife Information and Enhancement
P.O. Box 11104
Richmond, VA 23230

If this opinion is not provided by the Corps and does not contain national security or confidential business information, the Service will provide a copy to this State agency ten business days after the date of this opinion.

The Service appreciates this opportunity to work with the Corps in fulfilling our mutual responsibilities under the ESA. Please contact Cindy Schulz of this office at (804) 693-6694 if you require additional information.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

Enclosures

LITERATURE CITED

Churchfield, S. 1990. The natural history of shrews. Cornell University Press; Ithaca, NY.

French, T.W. 1980. Natural history of the southeastern shrew, *Sorex longirostris* Bachman. American Midland Naturalist 104:13-31.

Handley, C.O., Jr. 1979. Mammals of the Dismal Swamp; a historical account. Pages 297-357 in P.W. Kirk, Jr., eds., The Great Dismal Swamp. University Press of Virginia; Charlottesville, VA.

Rose, R.K. 1983. A study of two rare mammals endemic to the Virginia/North Carolina Dismal Swamp. Unpublished report prepared for U.S. Fish and Wildlife Service; Newton Corner, MA.

Rose, R.K. 1995. Final report of the field study to determine the presence of the federally threatened Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) on the property of Southeastern Virginia et al. and the property known as Fountaingate, located near London Bridge Road between Lake Placid Estates and the Piney Ridge subdivision in Virginia Beach, Virginia. Submitted to Thomas A. Stierhoff,

Stokes Environmental Associates, Ltd., Norfolk, VA.

U.S. Fish and Wildlife Service. 1994. Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) recovery plan. Technical/agency draft. Hadley, MA. 51pp.

APPENDIX A

09-21-95 Randy Stokes, McGuire, Woods, Battle, and Boothe; and Terry Grech, Virginia-Carolina Timber, Inc.; called the Service to discuss the proposed project and the possible necessity of an incidental take permit.

09-27-95 The Service visited the project site with Mr. Stokes and Mr. Grech. At this time, the project was discussed, via telephone, with the Corps.

09-27-95 The Service provided Mr. Stokes with an example of the type of information the Service would require to conduct formal consultation with the Corps on this project.

10-12-95 The Service received preliminary information and drawings from Mr. Stokes.

10-13-95 The Service received a telephone call from Mr. Stokes and the Corps during which project details were discussed.

10-23-95 The Service received a facsimile of the Corps' request to initiate consultation.

(Cschulz:10/23/95)
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bcc: ARD-South, Region 5
Endangered Species Coordinator, Region 5
CBFO Reading File
Endangered Species Biologist, CBFO
Law Enforcement, Yorktown
(Attn: Dan Hurt)
Law Enforcement, Richmond
(Attn: Senior Resident Agent)

10 business days after the date of this letter, mail copies to:

_____VDGIF, Richmond
(Attn: Wildlife Information and Enhancement)
DNH, Richmond
(Attn: Tom Smith)